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## C-A OPERATIONS PROCEDURES MANUAL

### 14.1 Environmental Management Program for Collider-Accelerator Department and Superconducting Magnet Division

Text Pages 2 through 9

#### Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
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Approved: \_\_\_\_\_  
Signature on File  
Collider-Accelerator Department Chairman Date

Approved: \_\_\_\_\_  
Signature on File  
Superconducting Magnet Division Head Date

M. Van Essendelft

<p><b>ENVIRONMENTAL MANAGEMENT PROGRAM</b></p> <p><b>Collider Accelerator Department and Superconducting Magnet Operations</b></p>	<p><b>Completed by:</b> <u>M. Van Essendelft</u></p> <p><b>Date:</b> <u>April 22, 2006</u></p>
<p><b>1. Significant Aspects:</b> (see SBMS “Criteria for Significant Aspects” for description of letter designation)</p> <ul style="list-style-type: none"> <li>• Radioactive Waste (a)</li> <li>• Hazardous Waste (a)</li> <li>• Regulated Waste (a)</li> <li>• Mixed Waste (a)</li> <li>• Liquid Discharge (b,c)</li> <li>• Atmospheric Discharge (a,b,c)</li> <li>• Water Consumption (a)</li> <li>• Storage/Use of Chemicals (a, b, c, f)</li> <li>• Storage/Use of Radioactive Material (a)</li> <li>• Power Consumption (a)</li> <li>• Soil Activation (a)</li> <li>• Sensitive Species &amp; Habitats (a, b, c)</li> <li>• Historical Contamination (a)</li> <li>• PCB’s (a)</li> </ul>	
<p><b>2. Department-wide Objective(s):</b> <i>The following is prepared to meet core functions one and five of the Department of Energy’s Integrated Safety Management System.</i></p> <p>A. <b><u>ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)</u></b> – Achieve re-registration of the ISO 14001 EMS Program.</p> <p>B. <b><u>COMPLIANCE</u></b> – Achieve full compliance with applicable environmental requirements.</p> <ul style="list-style-type: none"> <li>• Consistently meet all SPDES permit limits and comply with the Liquid Effluents subject area.</li> <li>• Conform to Article 12 Requirements.</li> <li>• Comply with Resource Conservation and Recovery Act (RCRA) and SBMS Radiological Waste Requirements</li> <li>• Meet Federal and State Air Program Requirements including reducing the use of (and eventual phase out of) Ozone Depleting Substances (ODS)</li> <li>• Support the goals of the EPA Performance Track Program</li> </ul> <p>C. <b><u>POLLUTION PREVENTION</u></b> – Integrate pollution prevention (P2) into work planning processes (facility design, experimental review, process assessment, work planning, etc.) and expand participation in the P2 program.</p> <ul style="list-style-type: none"> <li>• Reduce generation of hazardous, mixed, and low-level radioactive routine waste streams</li> <li>• Expand awareness and involvement in the BNL P2 Program.</li> <li>• Evaluate and implement pollution prevention opportunities.</li> <li>• Reduce or prevent generation of non-routine waste, including spills</li> </ul> <p>D. <b><u>COMMUNICATIONS</u></b> – Improve communications, trust, and relationship with stakeholders on environmental programs.</p>	

- E. **GROUNDWATER PROTECTION** – Fully implement groundwater protection program. Protect groundwater quality from further chemical and radiological releases, and remediate existing contaminated groundwater.
- F. **ENHANCE NATURAL AND CULTURAL RESOURCE MANAGEMENT PROGRAM** – Ensure responsible stewardship of natural and historical resources onsite.

**3. Department-wide Target(s):**

**A. ENVIRONMENTAL MANAGEMENT SYSTEM (EMS):**

- Achieve ISO 14001 re-registration (ROD).
- Policy Awareness: Provide at least 1 targeted EMS Awareness initiative at the supervisor and staff level at a tool box or pre-work meeting. Focus on how a specific task interacts with the environment and the employees responsibilities for that task. Include any consequences from departure from properly carrying out the assigned task.
- Request that the Laboratory to improve management oversight of new SBMS documents. This applies to both E and OSH related Subject Areas. The former SBMS Steering Committee has been disbanded in order to speed up the process of review and publication of requirements. Request that the Laboratory to reinstate an expedited review that involves Department Chairs and Division Managers so that requirements are fully supported and understood (ROD).

**B. COMPLIANCE:**

- Conduct a review of all solvent use, specifically methylene chloride, and ensure the chemical owner and other users are aware that the substance cannot be discharged to the sanitary system.
- Review MSDS of trade name products to identify any that may have methylene chloride as an ingredient. If found, evaluate the use and disposal practices of the product.
- Evaluate effectiveness of corrective actions identified on Tank inspection forms by reviewing FY04 and FY05 tank inspection checklists for timeliness, completeness and implementation of corrective actions.
- Identify at least one legacy waste (includes lab clean outs, etc) and disposition by 9/30/06.
- Communicate Satellite Accumulation Area requirements to Hazardous Waste Generators four times per year.
- Review product use and identify one Class I or Class II Ozone Depleting Substance (ODS) and replace with a Non-ODS substitute.
- Identify suitable replacements for mercury containing devices and prepare P2 funding requests to effect replacement and disposal of non-essential mercury.

**C. POLLUTION PREVENTION:**

- Target one Department specific waste stream for reduction and put in place an action plan to reduce it.
- Submit a minimum of one pollution prevention project proposals to the P2 Council by December 15, 2005.
- Submit a minimum of one success stories and/or lessons learned to the BNL P2 program manager by September 15, 2006.
- Continue the reduction of PCB containing devices at Linac and B912 (ROD).
- Reduce the number of spills by
  - Minimize the practice of parking on non paved surfaces;
  - Hold staff and contractor meetings on reducing hydraulic oil spills from equipment by ensuring hydraulic hoses are inspected periodically;
  - Hold toolbox and staff meetings on spills associated with overfills due to thermal expansion.
- Recycle excess electronic equipment at the Superconducting Magnet Division (SMD Self-Assessment ROD).
- Drain heat transfer fluid from short coil press in building 924 (SMD Self-Assessment ROD).

**D. COMMUNICATIONS:**

- Highlight environmental improvements in Lab-wide or Department outreach programs or publications.
- Assist the Laboratory in maintaining continuous public outreach by informing outside groups about environmental success stories concerning the C-AD facilities (ROD).
- Assist the Laboratory in promoting positive aspects of the environmental successes at C-AD to the CAC and BER (ROD).

**E. GROUNDWATER PROTECTION:**

- Design, operate, and maintain facilities in a manner that is protective of groundwater quality.
- Archive data on activated soils (ROD).
- Ensure the Focused Feasibility Study (FFS) being developed for 2006 for the regulators addresses the sampling required to monitor the g-2 plume in future years, and that the overall strategy is to reduce the sampling frequency commensurate with residual risk from the plume (ROD).

**F. ENHANCE NATURAL AND CULTURAL RESOURCE MANAGEMENT PROGRAM:**

- Specify the use of native vegetation where feasible in landscaping around buildings.

**4. Department-wide Environmental Performance Indicator(s):**

- Tier I inspection results
- Number of SPDES Permit exceedences by C-A as reported by BNL ESD.
- P2 projects, success stories, and lessons learned that are submitted to BNL P2 Council.
- Number of significant spills at C-A facilities.
- Volume/weight of routine wastes sent to BNL Waste Management Division
- SAA & 90 Day Area Inspection results
- Permitted Hood Air Emission log book entries
- Completion of tasks listed in Section 10

**5. Department-wide Program Description:**

Departmental self-assessment program, Tier I inspections, and annual compliance reviews by the Environmental Compliance Representative are designed to meet the EWMSD Environmental Objectives & Targets for FY2006. Submitting pollution prevention projects, success stories or lessons learned contribute towards achieving the EWMSD Environmental Objectives & Targets for FY2006. Tracking and trending waste generation and waste recycling as well as on time regulatory reporting contribute towards achieving EWMSD FY2006 Environmental Objectives & Targets on Recycling of Solid Waste and Regulated Waste Management. The minimization of wastes, prevention of spills and meeting SPDES permit limits also helps satisfy the EWMSD Environmental Objectives & Targets for FY2006.

Ozone water treatment systems were being piloted (since 1999) at two RHIC detectors in an effort to eliminate a source of hazardous water treatment chemicals. Since the systems appear to be successful similar systems have been installed for the SEM cooling water system, the NSRL cooling water system, and the RHIC RF cooling water system. If these continue to be successful, other C-A water systems will be modified to use the ozone treatment as funds become available. Institution of this Pollution Prevention Technology at all water systems would eliminate a potential environmental impact and help satisfy surface water compliance requirements.

**6. Potential Environmental Impact(s):**

- Hazardous waste, industrial or radioactive waste mismanagement could contaminate the environment and incur RCRA or local agency penalties.
- Improper discharges to recharge basins could result in a violation of the BNL SPDES permit.
- Undocumented atmospheric discharges could violate NYSDEC or EPA air emission regulations.
- Improper storage of oils could incur penalties under Suffolk County Article 12 or cause leaks, which could contaminate the environment.

**7. Legal and Other Requirements:**

The following BNL SBMS subject areas apply:

- Drinking Water
- Storage and Transfer of Hazardous Material
- Liquid Effluents (SPDES Permit – outfall 001, 002A, 002B, 003)
- Hazardous Waste Management
- Radioactive Waste Management
- Pollution Prevention
- Spill Response
- Oil/PCB management

**8. Operational Controls:** See [Operational Controls Forms](#)

**9. Budget:**

- Operating Budget
- ADS #A98D0168 (Cooling Water Systems Process) has been submitted for the elimination/reduction of water treatment chemicals within the C-A Dept. This ADS seeks funding for ozone water treatment units for all C-A cooling towers. This will help prevent the potential for SPDES permit exceedances. Currently BRAHMS, SEM, NSRL and RHIC RF have these systems operating.
- ADS #AA0D0007 (Cooling Water Systems Process) was submitted in FY 01 and continues to be funded for tritiated water system upgrades to comply with Suffolk County Article 12 requirements.

**10. Structure, Authorities, Responsibilities**

Tasks	Person Responsible	Completion Dates
<b>A. Environmental Management System:</b>		
• Achieve ISO 14001 re-registration (ROD)	C-A Associate Chair for ESHQ	06/06
• Policy Awareness: Provide at least 1 targeted EMS Awareness initiative at the supervisor and staff level at a tool box or prework meeting	C-A Associate Chair for ESHQ	05/06
• Request that the Laboratory to improve management oversight of new SBMS documents. This applies to both E and OSH related Subject Areas. The former SBMS Steering Committee has been disbanded in order to speed up the process of review and publication of requirements. Request that the Laboratory to reinstate an expedited review that involves Department Chairs and Division Managers so that requirements are fully supported and understood (ROD)	C-A Associate Chair for ESHQ	05/06
<b>B. Compliance:</b>		

<ul style="list-style-type: none"> <li>Conduct a review of all solvent use, specifically methylene chloride, and ensure the chemical owner and other users are aware that the substance cannot be discharged to the sanitary system</li> </ul>	ECR	08/06
<ul style="list-style-type: none"> <li>Review MSDS of trade name products to identify any that may have methylene chloride as an ingredient. If found, evaluate the use and disposal practices of the product.</li> </ul>	ECR	08/06
<ul style="list-style-type: none"> <li>Evaluate effectiveness of corrective actions identified on Tank inspection forms by reviewing FY04 and FY05 tank inspection checklists for timeliness, completeness and implementation of corrective actions</li> </ul>	ECR	06/06
<ul style="list-style-type: none"> <li>Identify at least one legacy waste (includes lab clean outs, etc) and disposition by 9/30/06</li> </ul>	C-A Environmental Coordinator, SMD ESH Coordinator	09/06
<ul style="list-style-type: none"> <li>Communicate Satellite Accumulation Area requirements to Hazardous Waste Generators four times per year</li> </ul>	C-A Environmental Coordinator, SMD ESH Coordinator	Quarterly
<ul style="list-style-type: none"> <li>Review product use and identify one Class I or Class II Ozone Depleting Substance (ODS) and replace with a Non-ODS substitute</li> </ul>	ECR	06/05
<ul style="list-style-type: none"> <li>Identify suitable replacements for mercury containing devices and prepare P2 funding requests to effect replacement and disposal of non-essential mercury</li> </ul>	ECR	09/06
<b>C. Pollution Prevention:</b>		
<ul style="list-style-type: none"> <li>Target one Directorate/Department/Division specific waste stream for reduction and put in place an action plan to reduce it</li> </ul>	C-A Environmental Coordinator, SMD ESH Coordinator	03/30/06
<ul style="list-style-type: none"> <li>Submit a minimum of one pollution prevention project proposals to the P2 Council by December 15, 2005</li> </ul>	ECR	12/15/05

<ul style="list-style-type: none"> <li>Submit a minimum of one success stories and/or lessons learned to the BNL P2 program manager by September 15, 2006</li> </ul>	ECR	09/06
<ul style="list-style-type: none"> <li>Reduce PCB containing devices at Linac and B912 (ROD)</li> </ul>	C-A Environmental Coordinator	05/06
<ul style="list-style-type: none"> <li>Reduce the number of spills through training &amp; awareness</li> </ul>	ECR	09/06
<ul style="list-style-type: none"> <li>Recycle excess electronic equipment at the Superconducting Magnet Division (SMD Self-Assessment ROD)</li> </ul>	SMD ESH Coordinator	09/06
<ul style="list-style-type: none"> <li>Drain heat transfer fluid from short coil press in building 924 (SMD Self-Assessment ROD)</li> </ul>	SMD 924 Building Manager.	09/06
<b>D. Communications:</b>		
<ul style="list-style-type: none"> <li>Highlight environmental improvements in Lab-wide or Department outreach programs or publications</li> </ul>	C-A ESHQ Division Head	09/06
<ul style="list-style-type: none"> <li>Assist the Laboratory in maintaining continuous public outreach by informing outside groups about environmental success stories concerning the C-AD facilities (ROD)</li> </ul>	C-A ESHQ Division Head	09/06
<ul style="list-style-type: none"> <li>Assist the Laboratory in promoting positive aspects of the environmental successes at C-AD to the CAC and BER (ROD)</li> </ul>	C-A Associate Chair for ESHQ	09/06
<b>E. Groundwater Protection:</b>		
<ul style="list-style-type: none"> <li>Design, operate, and maintain facilities in a manner that is protective of groundwater quality - Track the number of unusual or off normal events associated with groundwater impacts in current operations. Evaluate the effectiveness of actions associated with these events</li> </ul>	C-A ESHQ Division Head	Quarterly
<ul style="list-style-type: none"> <li>Archive data on activated soils (ROD)</li> </ul>	C-A Associate Chair of ESHQ	09/30/06



<ul style="list-style-type: none"> <li>Ensure the Focused Feasibility Study (FFS) being developed for 2006 for the regulators addresses the sampling required to monitor the g-2 plume in future years, and that the overall strategy is to reduce the sampling frequency commensurate with residual risk from the plume (ROD)</li> </ul>	C-A Associate Chair of ESHQ	09/30/06
<b>F. Enhance Natural &amp; Cultural Resource Management Program</b>		
<ul style="list-style-type: none"> <li>Specify the use of native vegetation where feasible in landscaping around buildings</li> </ul>	C-A Facilities & Experimental Support Head	Ongoing
<b>Other:</b>		
<ul style="list-style-type: none"> <li>Provide oversight and guidance to any plans developed to prevent RHIC Tunnel water infiltration</li> </ul>	C-A Associate Chair of ESHQ	In progress
<ul style="list-style-type: none"> <li>Perform planned upgrades to C-A water systems in accordance with ADS # 0007 and track progress (C-A ROD #3)</li> </ul>	C-A Water Systems Group Leader	In Process